

WHAT IS CLAIMED IS:

1. An imaging device comprising:

an imaging unit having a photoelectric converter for
5 converting an optical image into electric signal;

an optical unit for forming an optical image of a
subject on the photoelectric converter;

a drive unit for actuating at least part of the
optical unit in an optical axis direction; and

10 a detector for detecting a position of at least part
of the optical unit with respect to the optical axis
direction,

wherein at least either of the drive unit and the
detector are provided in a projected area of the imaging
15 unit in the optical axis direction.

2. An imaging device as claimed in claim 1, wherein
the optical unit is provided in the projected area of the
imaging unit in the optical axis direction.

20 3. An imaging device as claimed in claim 1, wherein
the imaging unit has a rectangular shape, and

wherein at least either of the drive unit and the
detector are provided on corners of the rectangular shape.

4. An imaging device as claimed in claim 1, wherein the photoelectric converter of the imaging unit is positioned so as to be offset from a center of the imaging unit, and

5 wherein at least either of the drive unit and the detector are provided opposite to the offset position of the photoelectric converter.

5. An imaging device as claimed in claim 1, wherein
10 the optical unit comprises:

a lens; and

a lens frame which supports the lens; and

wherein the imaging device further comprises:

a chassis having a hanger shaft by which the lens
15 frame is supported so as to be capable of moving in the optical axis direction.

6. An imaging device as claimed in claim 5, wherein the hanger shaft is provided in the projected area of the
20 imaging unit in the optical axis direction.

7. An imaging device as claimed in claim 5, wherein the imaging unit has a rectangular shape, and

wherein the hanger shaft is provided on a corner of
25 the rectangular shape.

8. An imaging device as claimed in claim 7, wherein the detector is provided on a corner of the imaging unit opposite to the hanger shaft with respect to the optical axis.

9. An imaging device as claimed in claim 5, wherein the photoelectric converter of the imaging unit is positioned so as to be offset from a center of the imaging unit, and

wherein the hanger shaft is provided opposite to the offset position of the photoelectric converter.

10. An imaging device as claimed in claim 5, wherein the drive unit comprises:

a motor having a drive shaft perpendicular to the optical axis of the optical unit; and

a conversion mechanism for converting a rotational motion of the drive shaft into a linear motion in the optical axis direction.

11. An imaging device as claimed in claim 10, wherein the conversion mechanism comprises:

a driving gear provided on the drive shaft of the motor; and

a cam gear meshing with the driving gear, having a cam surface with which a cam follower formed on an extension of the optical unit is in pressure contact, and having a shaft parallel to the optical axis of the optical unit, and

5 wherein at least part of the cam gear is provided in the projected area of the imaging unit in the optical axis direction.

12. An imaging device as claimed in claim 5, wherein
10 the imaging unit has a rectangular shape, and

 wherein the chassis has a substantially oblong shape, one side of which has a substantially same length as that of the imaging unit.

15 13. An imaging device as claimed in claim 12, wherein the imaging device further comprises a cover which covers the front face of the imaging device and has an aperture for directing light from the subject to the optical unit, and

20 wherein the chassis comprises a pair of elastic pieces having hooks at extremities thereof, and

 wherein the hooks of the pair of elastic pieces engage with the cover so that the cover is fixed on the chassis.

14. An imaging device as claimed in claim 1, wherein the optical unit comprises:

a lens;

an inner barrel holding the lens; and

5 an outer barrel meshing with outside of the inner barrel through medium of helicoid screws.

15. An imaging device as claimed in claim 14, wherein the drive unit comprises:

10 a motor having a drive shaft parallel to the optical axis of the optical unit;

a driving gear provided on the drive shaft of the motor; and

an intermediate gear that meshes with the driving gear
15 and that meshes with a gear formed on an outer circumferential surface of the outer barrel of the optical unit, and

wherein at least part of the intermediate gear is provided in the projected area of the imaging unit in the
20 optical axis direction.

16. An imaging device as claimed in claim 14, wherein the drive unit comprises:

a motor having a drive shaft perpendicular to the
25 optical axis of the optical unit; and

a driving gear that is provided on the drive shaft of the motor and that meshes with a gear formed on an outer circumferential surface of the outer barrel of the optical unit, and

5 wherein at least either of the motor and the driving gear are provided in the projected area of the imaging unit in the optical axis direction.

17. An imaging device as claimed in claim 1, wherein
10 the detector is provided so as to adjoin the drive unit, and

 wherein output terminals of the detector and feeder terminals of the drive unit protrude in the same direction.

15 18. An imaging device as claimed in claim 1, wherein the hanger shaft is positioned on a bisector line that bisects the imaging unit up and down or left and right, and

 wherein the drive unit and the detector are positioned on opposite sides with respect to the bisector line.

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19. An imaging device comprising:

 an imaging unit having a photoelectric converter for converting an optical image into electric signal;

 an optical unit for forming an optical image of a
25 subject on the photoelectric converter; and

an drive unit for manually actuating at least part of the optical unit in an optical axis direction,

wherein the drive unit is provided in a projected area of the imaging unit in the optical axis direction.

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20. An imaging device as claimed in claim 19, wherein the optical unit comprises:

a lens;

an inner barrel holding the lens; and

10 an outer barrel that meshes with outside of the inner barrel through medium of helicoid screws,

wherein the drive unit comprises an actuating lever extending from the outer barrel or the inner barrel, and

15 wherein the actuating lever is provided in the projected area of the imaging unit in the optical axis direction.

21. An imaging device as claimed in claim 19, wherein the optical unit comprises:

20 a lens;

a lens frame that holds the lens and that is supported so as to be capable of moving in the optical axis direction, and

wherein the drive unit comprises:

a spring for biasing the lens frame in the optical axis direction;

a ring having cam pieces that coincide with cam grooves formed on the lens frame, the ring capable of
5 rotating about the optical axis; and

an actuating lever extending from the ring, and

wherein the actuating lever is provided in the projected area of the imaging unit in the optical axis direction.

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22. A portable equipment comprising the imaging device as claimed in claim 1.

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23. A portable equipment as claimed in claim 22, wherein the optical unit comprises:

a lens; and

a lens frame which supports the lens, and

wherein the imaging device further comprises:

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a chassis having a hanger shaft by which the lens frame is supported so as to be capable of moving in the optical axis direction, and

wherein the hanger shaft is provided on a corner of the rectangular shape.